

# Illicit Discharge Detection & Elimination (IDDE) Program

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*For*

*Lakes Highway District*



*PREPARED BY:*

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## Executive Summary

### Identification

Lakes Highway District has developed this Manual to help provide guidance on efficient detection and elimination of Illicit Discharges. Jurisdictional boundaries of the LHD are confined to the public road right-of-way. LHD does not have ordinance and/or enforcement authority within boundaries of the LHD. Ordinance and regulatory authority are with the local Kootenai County Government via the Code Enforcement Office and Kootenai County Sheriff's Department.

Within the boundaries of Lakes Highway District ("LHD") consists a network of urban and rural roads encompassing eight (8) cities<sup>1</sup>. Road mileage within the District totals 262 miles, with 32 miles of gravel and roadway pavements consisting of Base Surface Treatments (BST's) and Asphalt Concrete Pavement (AC).

Within the MS4 Boundaries of LHD consists 13 subdrainage basins consisting of 1635-total acres. The average size of the subdrainage basins located within the LHD MS4 Boundary is 125- acres with the smallest and largest basins equaling 26.4-acres and 261-acres, respectively.

### Scope

The scope of this program report includes the following:

- Illicit Discharge Basics
- Components of the Program
- Implementation
- Description of Components
- Proposed Work Plan
- Spill Response
- Illegal Dumping Procedures

These items are discussed in the following sections of this report.

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<sup>1</sup> City of Coeur d'Alene, Dalton, Hayden, Hayden Lake, Rathdrum, Spirit Lake, Athol and Bayview.

## Illicit Discharge Basics

### General

The term “illicit discharge” has many meanings. Regulation 40 CFR 122.26(b)(2) defines an illicit discharge as any discharge to an MS4 that is not composed entirely of storm water, except allowable discharges pursuant to an NPDES permit, including those resulting from fire fighting activities. Illicit discharge is defined as follows:

- Storm drainage that has measurable flow during dry weather containing pollutants and/or pathogens. A storm drain containing no pollutants is simply considered a discharge.
- Each illicit discharge has a unique frequency, composition and mode of entry in the storm drain system.
- Illicit discharges are frequently caused when the sewage disposal system interacts with the storm drain system. A variety of monitoring techniques is used to locate and eliminate illegal sewage connections. These techniques trace sewage flows from the stream or outfall, and go back up the pipes or conveyances to reach the problem connection.
- Illicit discharges of other pollutants are produced from specific source areas and operations known as “generating sites.” Knowledge about these generating sites can be helpful to locate and prevent non-sewage illicit discharges. Depending on the regulatory status of specific “generating sites,” education, enforcement and other pollution prevention techniques can be used to manage this class of illicit discharges.

### Examples of Direct Illicit Discharges to be addressed:

Sanitary waste piping that is directly connected from a home to the storm sewer.
Materials (e.g. used motor oil) that have been dumper directly into a storm sewer catch basin.
Shop floor drain that is connected directly to a storm sewer.
Cross connection between a sanitary sewer and a storm sewer

### Examples of In Direct Illicit Discharges to be addressed:

An old and damaged sanitary sewer line that is leaking into a cracked storm sewer line.

A failing septic system that is leaking into a cracked storm sewer line or causing surface discharge into the storm sewer, ditch or culvert.

### Examples of Non-storm water discharges that may not need to be addressed if determined by LHD and/or the EPA not to be a source of pollutants.

Water Line Flushing	Irrigation water
Landscape Irrigation	Springs
Diverted Stream Flows	Water from Crawl Space Pumps
Rising Ground Waters	Footing Drains
Uncontaminated Ground Water Infiltration	Lawn Watering
Uncontaminated Pumped Ground Water	Individual Residential Car Washing
Discharges from Potable Water Sources	Flows from Riparian Habitats and Wetlands
Foundation Drains	Dechlorinated Swimming Pool Discharges
Air conditioning condensation	Street Wash Water

## Examples of Land Use, Generating Site and Activities that have the Potential to Produce Indirect Discharges

Land Use	Generating Site	Activity that Produces Discharge
Residential	• Apartments • Multi-family • Single Family Detached	• Car Washing • Driveway Cleaning • Dumping/Spills (e.g., leaf litter and RV/boat holding tank effluent) • Equipment Wash downs • Lawn/Landscape Watering • Septic System Maintenance • Swimming Pool Discharges
Commercial	• Campgrounds/RV parks • Car Dealers/Rental Car Companies • Car Washes • Commercial Laundry/Dry Cleaning • Gas Stations/Auto Repair Shops • Marinas • Nurseries and Garden Centers • Oil Change Shops • Restaurants • Swimming Pools	• Building Maintenance (power washing) • Dumping/Spills • Landscaping/Grounds Care (irrigation) • Outdoor Fluid Storage • Parking Lot Maintenance (power washing) • Vehicle Fueling • Vehicle Maintenance/Repair • Vehicle Washing • Washdown of greasy equipment and grease traps
Industrial	• Auto recyclers • Beverages and brewing • Construction vehicle washouts • Distribution centers • Food processing • Garbage truck washouts • Marinas, boat building and repair • Metal plating operations • Paper and wood products • Petroleum storage and refining • Printing	• All commercial activities • Industrial process water or rinse water • Loading and un-loading area wash downs • Outdoor material storage (fluids)
Institutional	• Cemeteries • Churches • Corporate Campuses • Hospitals • Schools and Universities	• Building Maintenance (e.g., power washing) • Dumping/Spills • Landscaping/Grounds Care (irrigation) • Parking Lot Maintenance (power washing) • Vehicle Washing
Municipal	• Airports • Landfills • Maintenance Depots • Municipal Fleet Storage Areas • Ports • Public Works Yards • Streets and Highways	• Building Maintenance (power washing) • Dumping/Spills • Landscaping/Grounds Care (irrigation) • Outdoor Fluid Storage • Parking Lot Maintenance (power washing) • Road Maintenance • Spill Prevention/Response • Vehicle Fueling • Vehicle Maintenance/Repair • Vehicle Washing

## Finding, Fixing, and Preventing Illicit Discharges

The purpose of an IDDE program is to find, fix and prevent illicit discharges, and a series of techniques exist to meet these objectives. The remainder of the report describes the major tools necessary for implementation of the LHD IDDE program, which is introduced below:

### Finding Illicit Discharges

The highest priority in most programs is to find any continuous and intermittent sewage discharges to the storm drain system. A range of monitoring techniques can be used to find

sewage discharges. In general, monitoring techniques are used to find problem areas and then trace the problem back up the stream or pipe to identify the ultimate generating site or connection. Monitoring can sometimes pick up other types of illicit discharge that occur on a continuous or intermittent basis (e.g., wash water and liquid wastes). Monitoring techniques are classified into three major groups:

- Outfall Reconnaissance Inventory
- Indicator Monitoring at Storm Water Outfalls and In-stream
- Tracking Discharges to their Source

### **Fixing Illicit Discharges**

Once sewage discharges or other connections are discovered, they can be fixed, repaired or eliminated through several different mechanisms. Communities should establish targeted education programs along with legal authority to promote timely corrections. A combination of carrots and sticks should be available to deal with the diversity of potential dischargers.

### **Preventing Illicit Discharges**

The old adage “an ounce of prevention is worth a pound of cure” certainly applies to illicit discharges. Transitory discharges from generating sites can be minimized through pollution prevention practices and well-executed spill management and response plans.



## Components of the IDDE Program

Components of the IDDE Program are included in the following table.

Key Tasks and Products in the IDDE Program		
Component	Key Tasks	Products
Desktop Assessment of Illicit Discharge Potential	<ul style="list-style-type: none"> <li>• Compile Mapping Using GIS, GPS</li> <li>• Define Discharge Screening Factors</li> <li>• Generate Maps for Field Screening</li> </ul>	<ul style="list-style-type: none"> <li>• Prioritize Watersheds for Field Screening</li> </ul>
Search for Illicit Discharges Problems in the Field	<ul style="list-style-type: none"> <li>• Outfall Reconnaissance Inventory (ORI)</li> <li>• Follow-up Monitoring at Suspect Outfalls</li> <li>• Access to Lab Services</li> </ul>	<ul style="list-style-type: none"> <li>• Initial Storm Drain Outfall Map</li> <li>• Develop Monitoring Strategy</li> <li>• Define Lab Access</li> </ul>
Isolate and Fix Individual Discharges	<ul style="list-style-type: none"> <li>• Corrections and Enforcement</li> </ul>	<ul style="list-style-type: none"> <li>• Maintain Tracking System</li> </ul>
Prevent Illicit Discharges	<ul style="list-style-type: none"> <li>• Select Key Discharge Behaviors</li> </ul>	<ul style="list-style-type: none"> <li>• Implement Training and Public Outreach</li> </ul>
Program Evaluation	<ul style="list-style-type: none"> <li>• Analyze Tracking System</li> <li>• Characterize Illicit Discharges Detected</li> <li>• Update Goals and Strategies</li> </ul>	<ul style="list-style-type: none"> <li>• Present Results in Annual Reports</li> </ul>

Implementation strategies for the program components are included in the following table.

## Implementation of Program Components

Implementation of Program Components					
IDDE Program Component	When To Do It	Startup Costs	Annual Cost	Expertise Level	Type of Expertise
Desktop Analysis	2010	\$\$	\$\$	??	Engineering, GIS, GPS
Field Search/Monitoring	2011-2014	\$\$	\$\$	?-???	Engineer, Field Inspector, Lab
Isolate and Fix	2011-2014	\$	\$-\$\$\$	?-???	Engineer, Inspector, Contract Work
Prevention	2011-2014	\$\$	\$	??	Education
Evaluation	Annually	\$	\$\$	??	Engineering / Data Analysis
Key: \$ = <\$10,000      \$\$ = \$10,000 - 25,000      \$\$\$ = \$25,000 - 50,000      \$\$\$\$ = > \$50,000 ? - Simple      ?? - Moderately Difficult      ??? - Complex					

## Description of Program Components

### Desktop Assessment of Illicit Discharge Potential

#### Mapping

In 2010 LHD utilized GPS and GIS to develop a comprehensive discharge map. Development of this map include field reconnaissance to ground truth both previously prepared maps and also to verify whether or not unaccounted for discharges were mapped. The map includes all District Boundaries plus cities within LHD and their perspective jurisdictional boundaries.

#### Discharge Screening Factors

In the following table is a comparative “fingerprint” of flow types with associated mean values.

Comparative “Fingerprint” (Mean Values) of Flow Types						
Flow Type	Hardness (mg/L as CaCO <sub>3</sub> )	NH <sub>3</sub> (mg/L)	Potassium (mg/L)	Conductivity (μS/cm)	Fluoride (mg/L)	Detergents (mg/L)
Sewage	50 (0.26)*	25 (0.53)*	12 (0.21)*	1215 (0.45)*	0.7 (0.1)*	9.7 (0.17)*
Septage**	57(0.36)	87 (0.4)	19 (0.42)	502 (0.42)	0.93 (0.39)	3.3 (1.33)
Laundry Wash water	45 (0.33)	3.2 (0.89)	6.5 (0.78)	463.5 (0.88)	0.85 (0.4)	758 (0.27)
Car Wash water	71 (0.27)	0.9 (1.4)	3.6 (0.67)	274 (0.45)	1.2 (1.56)	140 (0.2)
Plating Bath (Liquid Industrial Waste**)	1430 (0.32)	66 (0.66)	1009 (1.24)	10352 (0.45)	5.1 (0.47)	6.8 (0.68)
Radiator Flushing (Liquid Industrial Waste**)	5.6 (1.88)	26 (0.89)	2801 (0.13)	3280 (0.21)	149 (0.16)	15 (0.11)
Tap Water	52 (0.27)	<0.06 (0.55)	1.3 (0.37)	140 (0.07)	0.94 (0.07)	0 (NA)
Groundwater	38 (0.19)	0.06 (1.35)	3.1 (0.55)	149 (0.24)	0.13 (0.93)	0 (NA)
Landscape Irrigation	53 (0.13)	1.3 (1.12)	5.6 (0.5)	180 (0.1)	0.61 (0.35)	0 (NA)
<p>* The number in parentheses after each concentration is the Coefficient of Variation; NA = Not Applicable</p> <p>** All values are from Tuscaloosa, AL monitoring except liquid wastes and septage, which are from Birmingham, AL. Sources: Pitt (project support material) and Pitt et al. (1993)</p>						

Source: EPA Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assistance.

## Search for Illicit Discharge

### Field Screening

If dry weather field screening efforts reveal discharges with color, odor, turbidity, oil sheen, or surface scum, a field analysis shall be conducted that includes testing of the discharge for detergents and ammonia. This testing shall be completed to determine whether the flow is contaminated with sanitary sewer, wastewater, and/or whether the source is tap water or a natural source of water.

### Detection

Suspected or observed illicit discharges will be investigated to determine the source and nature of the discharge. The context of illicit discharges used in this plan includes the following categories:

**Category 1:** Incidental spills or disposal of wastes and other prohibited non-stormwater discharges to the MS4. These may be intentional, unintentional, or accidental and could enter the MS4 through drain inlets, catch basins, manholes, or be otherwise deposited in the road right-of-way such that runoff may potentially reach the MS4.

**Category 2:** Continuous or intermittent discharges of sanitary sewage to the MS4 due to the failure or leakage of a sanitary sewer system.

**Category 3:** Continuous or intermittent prohibited non-stormwater discharges to the MS4 other than through an illicit connection. These could occur as surface runoff from outside the road right-of-way (e.g., wash-down area from an industrial site).

**Category 4:** Continuous or intermittent prohibited non-stormwater discharges to the MS4 through an illicit connection.

Detection of illicit discharges will be accomplished as outlined below.

### Identify Illicit Discharges

Priority areas are selected based on the likelihood of illicit connections (Category 4 illicit discharges), which typically are found in areas with older sanitary sewer lines. Illicit discharge detection will be performed in the priority areas identified herein as part of the normal daily activities of the LHD field staff. They will primarily inspect for Category 1-3 illicit discharges during dry weather monitoring.

Outfalls within the LHD's MS4 Boundaries will be inspected on a rotational, based on the following priority:

- Priority No. 1 – Avondale: given the number of residential units, the adjoining golf course and aging sewer lines
- Priority No. 2 – Friar: given the number of residential units, the adjoining Avondale Lake that discharges to Hayden and aging water/sewer lines.
- Priority No. 3 – South Hayden Lake, West of Half Mile Lane: give the number of residential units that adjoin the lake and aging sewer lines.
- Priority No. 4 – South Hayden Lake, East of Half Mile Lane: given the reduced number of residential units adjoining the lake.

**A map of the monitoring areas is included in Appendix A.** A complete assessment of the Priority Areas will be completed every 8 years or 50% every 4 years. This allows LHD to review a given priority area on 2 consecutive years to help ensure any potential issues are completely resolved before moving onto the next area. This approach however does not discount the fact that LHD Staff continually works within each of the priority areas throughout each year and therefore if discrepancies are observed outside of the identified cycle of inspections that the potential discrepancies will be dealt with immediately.

If a suspect illicit discharge is detected during field inspection based on color, sheen, odor and/or visual signs of erosion, samples of the water will be collected and tested at a local contract water quality testing laboratory.

### **Find the Source**

At a minimum, if the inspector does observe actual flow from an MS4 outfall, during dry weather, he/she should specifically note any observed color, odor, clarity, floating solids, foam, sheen, suspended or settled solids or other indicators of pollution.

When a problem area or discharge is found, additional efforts are necessary to determine the source of the discharge. Upon discovery of a problem area or prohibited discharge where the source is in question, LHD will coordinate with the County Code Enforcement Officer to determine the best method of searching. Methods that can find the source of illicit discharges include: thorough inspections by trained County Staff, water sampling/testing, dye-testing buildings in the problem areas, dye or smoke-testing buildings through coordination with the property owner, tracing the discharge upstream in the storm sewer, and using video to inspect storm sewers.

## Responsible Parties

Responsibilities for illicit discharge detection and typical illicit discharge inspection type are as follows:

Tasks	Jurisdictional Authority	Responsible Parties
Inspection of Illicit Potential Discharge within Public Road Right-of-Way	LHD	LHD
Inspection of Potential Illicit Discharge from a Private Property	County	County
Repair / Cleanup of Illicit Discharge within Public R/W	LHD / County HazMat / Sewer District	LHD / County HazMat
Enforcement	County	County

## Document Actions Taken

All actions relating to illicit discharge detection will be recorded in a database administered by LHD. The database will be organized by MS4 outfall and will contain information such as: the number of outfalls inspected, any complaints received, and tests conducted. Illicit discharge detection activities will also be documented on the storm sewer system map.

## Training

LHD employees will be required to attend IDDE training annually. This IDDE training utilizes “Municipal Storm Water Pollution Prevention - Storm Watch” prepared by EXCAL Visual and assists employees with recognizing discharges and proper reporting procedures.

## Isolate and Fix Illicit Discharge

When a drainage area is identified, storm drain investigations can narrow the source of a potential illicit discharge to a single segment of a storm sewer. The investigation should start at the outfall and work progressively up stream. If necessary, LHD may coordinate with outside contractors, to perform the following tasks:

- Smoke Testing
- Video Taping
- Dye Testing
- Water Sampling

On-Site Discharge Investigations Once the illicit discharge has been isolated to a specific section of storm sewer, an on-site investigation can be performed. On-site investigations outside of the public road right-of-way (beyond the jurisdiction of LHD) are performed by the County through Code Enforcement Inspections (the Site Disturbance Ordinance). LHD employees will perform

the investigations within the public road right-of-way and report findings to the County Code Enforcement Officer for enforcement action.

## Work Plan

The following table identifies the IDDE work plan for 2010-2019.

Year	Task	Description
<b>2010</b>	Develop IDDE Program	Prepare and develop this program for implementation in 2010-2015.
	Training	Provide Storm Watch, Municipal Storm Water Pollution Prevention Video Training.
	Public Outreach	Provide Website and SWMP contact for reporting
<b>2011-2012 Avondale</b>	Dry Weather Screening	Work to include those tasks identified in the screening procedure. <i>Sampling locations: Brighton and Avondale Loop, Outfall Avondale Lake at Lakeview Drive Culvert Crossing</i>
	Training	Provide Storm Watch, Municipal Storm Water Pollution Prevention Video Training.
	Public Outreach	Provide Website and SWMP contact for reporting
<b>2012-2013 Friar</b>	Dry Weather Screening	Work to include those tasks identified in the screening procedure. <i>Sampling location: Rimrock and Aspen, Outfall Avondale Lake at Lakeview Drive Culvert Crossing.</i>
	Training	Provide Storm Watch, Municipal Storm Water Pollution Prevention Video Training.
	Public Outreach	Provide Website and SWMP contact for reporting
<b>2014-2015 South Hayden Lake, West of Half Mile Lane</b>	Dry Weather Screening	Work to include those tasks identified in the screening procedure. <i>Sampling location: Manhole/Drainage Crossing, 0.5 mile east of Toblers</i>
	Training	Provide Storm Watch, Municipal Storm Water Pollution Prevention Video Training.
	Public Outreach	Provide Website and SWMP contact for reporting
<b>2016-2017 South Hayden Lake, East of Half Mile Lane</b>	Dry Weather Screening	Work to include those tasks identified in the screening procedure. <i>Sampling location: Hayden Lake Road at Moen</i>
	Training	Provide Storm Watch, Municipal Storm Water Pollution Prevention Video Training.
	Public Outreach	Provide Website and SWMP contact for reporting
<b>2018-2019 Avondale</b>	Dry Weather Screening	Work to include those tasks identified in the screening procedure. <i>Sampling locations: Brighton and Avondale Loop, Outfall Avondale Lake at Lakeview Drive Culvert Crossing</i>
	Training	Provide Storm Watch, Municipal Storm Water Pollution Prevention Video Training.
	Public Outreach	Provide Website and SWMP contact for reporting

The work plan includes screening each of regions two consecutive years with a complete inspection of the MS4 every 8-years. Screening locations were selected based on existing major discharge locations. Again, this approach however does not discount the fact that LHD Staff continually works within each of the priority areas throughout each year and therefore if

discrepancies are observed outside of the identified cycle of inspections that the potential discrepancies will be dealt with immediately.

### Screening Procedures

Procedures for implementing annual screening of sub basins are as follows:

Task	Description
Dry Weather Field Inspections	Outfall Reconnaissance Inventory (ORI) - MS4's shall be visited at a minimum of one time during the months of July and August.
Dry Weather Water Quality Testing	At a minimum, if the inspector observes actual flow from an MS4 outfall, during dry weather, he/she should specifically note any observed color, odor, clarity, floating solids, foam, sheen, suspended or settled solids or other indicators of pollution. Additional water quality testing may also be warranted. If deemed necessary by the permit coordinator, obtain a sample kit from Accurate Testing Labs in Hayden or other approved source and sample for parameters identified.
Analysis of Water Quality Data	Compare background tests to dry weather sampling results, if water present during dry weather inspections.
Reporting	Prepare a technical memo identifying the following: <ul style="list-style-type: none"><li>• Work Performed</li><li>• Results from Water Quality Testing</li><li>• Illicit Discharge Detected, Reported and Results</li><li>• Inclusion of SWMP email tracking log.</li></ul>



## Spill Response Plan

### Purpose

To ensure all hazardous substances spilled within LHD are properly dealt with to ensure materials do not contaminate waters within the MS4. For Hazardous Materials Response on public roads and/or private property contact the Fire District who is the responsible agency within LHD for spill response. The Northern Lakes Fire Protection District, Standard Operating Guideline for Hazardous Materials Response is included herein as reference. Also, refer to LHD's Operations and Maintenance Manual for the Operating Procedures included therein.

### Contact Information

The general spill response procedure is to stop the source of the spill, contain any spilled material, and clean up the spill timely to prevent accidental injury or other damage from occurring. Notify the supervisor immediately if a spill is identified.

### Required Action in the Event of a Spill

In the event we are faced with a spill, operators shall perform a Risk Assessment of the scene to include the following:

- Safety first.
- If there is a fire or medical attention is needed, call 911
- Notify the Road Supervisor for reporting and documentation of the spill
- The supervisor shall contact the Fire Department for assessment and cleanup. The LHD shall assist when possible, as directed by the Fire Department.

### Emergency Contact Information

Immediately call **911** in the event of injury, fire or potential fire, spill of a hazardous substance that gives rise to an emergency situation, or release of a hazardous substance to the environment (i.e. ground, surface water, or storm water drains).

If a hazardous substance spill has been released to soil, surface water or drains the following notifications must be performed:

[Contact]	[Phone #]
Northern Lakes Fire District	(208) 772-3044
Timber Lake Fire District	(208) 683-3333
Idaho Department of Environmental Quality	(208) 769-1422
Panhandle Health District	(208) 415-5200

## **Illegal Dumping**

In the event of an illegal dumping within the public right-of-way under the jurisdiction of LHD, notify the supervisor and proceed as directed.

If a vehicle identification or license is obtained, the supervisor shall contact sheriff for enforcement action. If the materials are deemed to be hazardous, the supervisor shall contact the County HazMAT Team for proper disposal. Otherwise, the supervisor will direct cleanup and disposal of materials dumped within the public rights of way to be disposed of and the County Landfill.

## Illicit Discharge Field Reporting and Tracking Log

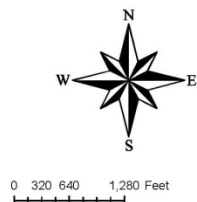
### Example Reporting Form

LAKES HIGHWAY DISTRICT FIELD INSPECTION REPORT					
DATE:					
INSPECTION AREA: Avondale					
INSPECTOR:					
Weather Conditions:					
ROADS INSPECTED					
	LENGTH	# Culvert Crossings	Observed Water in Road Ditch (Y/N?)	Observed Water in Culvert (Y/N?)	Grab Samples Taken for Lab Testing (Y/N?)
Lancaster					
Bradbury					
Shamrock					
Deer Park					
Cambridge					
Rimrock					
York					
Avon					
Trafalger					
Kensington					
St. James					
Avondale Loop Road					
Brighton					
Thames					
Note: if storm water is observed, document below in the diary along with actions taken (i.e. grab sampling for lab tests)					
DIARY SECTION					

## **Appendix A – MS4 Area Mapping**



# Lakes Highway District Kootenai County Idaho 2010



Effective MS4 Drainage Area

### Legend

- Storm Structures
- MS4 Boundary 2010
- MS4 Non-Draining Area
- MS4-Roads with Ditches
- LHD-Boundary
- LHD-Railroads
- LHD-Highways
- LHD Roads 2010
- LHD-Hydro
- City Limits Hayden
- City Limits Dalton Gardens
- City Limits Hayden Lake
- City Limits Coeur D'Alene
- MS4 Basins

